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FOR FURTHER TECHNICAL PROGRESS IN CITY TELEPHONE COMMUNICATIONS

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The July Plenum of the TsK KPSS [Central Committee of the Communist Party of the Soviet Union] developed a concrete program for a further mighty increase in all branches of the national economy of our great socialist homeland. The decisions of the Plenum of the TsK attach great importance to matters of technical progress, the introduction of modern achievements of science and engineering into production, the maximum utilization of production reserves, and an undeterred increase in the creative initiative of the masses. The struggle for technical progress, for wide application of new, advanced techniques and technology, for the improvement of existing equipment and apparatus is the most important obligation of every leader, engineer, technician, and worker.

From the decisions of the Plenum of the TsK there flow great and responsible tasks for Soviet communications workers, including the workers of city telephone networks, of scientific research organizations engaged in the development of telephone equipment, and of the plants furnishing this equipment. It is necessary to achieve the maximum use of the existing telephone facilities of city telephone communications, to modernize obsolete equipment, and, what is most important, to develop and introduce new techniques. With these new, more perfect techniques it will be possible to achieve better quality in city telephone communications with a relatively small operating establishment. It is also necessary to take every step to automate production processes (especially the more labor-consuming processes), to search for internal reserves to increase the productivity of labor, the quality of telephone communications and the cultural level of the service to the public, to attain the well-timed fulfillment of all tasks under the plan.

During the postwar years much work has been done in the Soviet Union in the technical re-equipping of city telephone networks. Soviet specialists developed and industrially mastered production of the AIS-47 automatic telephone exchange with the Strowger system, which has a number of advantages over earlier automatic telephone exchanges of the mechanical type. Exchanges of the new system have already been built in 42 cities. Special intermediate equipment has been created for combined operation of AIS's of Strowger and mechanical systems. New, improved telephones of the TAN-5 [dial phone] type and automatic telephones of the AMT [pay phone] and RMT [?] types are in production and have permitted raising the quality of telephone communications and expanding the system of automatic telephones, thereby improving the service rendered wide circles of the urban population by telephone communications. Assemblies are being introduced for two-wire junction lines. The use of these assemblies decreases copper requirements in the installation of inter-exchange communications facilities by almost 30 percent. In order to save lead in city telephone networks, TSSh and TRVKSb cables with sheathings of masticated rubber have come into wide use. Beginning with 1955 plans for line construction in city telephone networks call for the installation of sectional reinforced-concrete vaults and manholes as well as for the mechanization of labor-consuming operations, which will permit a considerable reduction in the time and cost of construction.

It must be pointed out, however, that while the installation of the ATS-47 station equipment in city telephone networks and the introduction of new types of telephones and cables have permitted increasing the capacity of city telephone exchanges and improving the quality of telephone communications, these new technical facilities nevertheless lag behind the newest techniques. Hence, every step must be taken to push the completion and realization of developments in the field of city telephone communications achieved by our specialists at this time.

This primarily concerns modernization of the ATS-47. The Ministry of Radio Engineering USSR and the Ministry of Communications USSR have already conducted work on improvement of the ATS-47 equipment. As a result of changes made in the circuits and design of the equipment the effective range of the ATS has been increased from 30 to 40 kilometers, changes have been made in the system of testing, the operating conditions of the pulse relays in all instruments have been improved, a new ring-off system has been introduced, constructional details of the decade step-by-step finders have been improved, and provisions have been made for automatic checking of equipment during operation. All this increases the operational reliability of the equipment and mechanisms of the exchanges and decreases the labor expended in servicing them. In addition, the improved ATS-47 equipment permits operational organization of intercity telephone communications according to the ordered and prompt system and according to the rapid system (semiautomatic and automatic). The problem now consists in producing the improved ATS-47 equipment in the shortest possible time and on a scale meeting the requirements of the city telephone networks. Aside from this, the workers of scientific research institutes, design offices, and industry must work for the creation of even more advanced systems of automatic telephone exchanges based on the use of electronic and semiconductor techniques and low-inertia electromagnetic devices.

It is also necessary to achieve the maximum rate of production of unattended automatic telephone exchanges of low capacity (100 to 900 subscribers), the development of which has already been successfully completed by Soviet specialists. The system and construction of the exchanges provide reliable operation without the constant attendance of technical personnel, for testing of the equipment is achieved from the rayon ATS by means of semiautomatic testing apparatus. The exchange receives its power from the city power system and does not require storage batteries or other sources of current. The introduction of such unattended exchanges will permit more rapid installation of telephone facilities in isolated settlements and large dwellings, at the same time affording considerable savings in the volume and cost of line construction.

Current work in the development of a new telephone (intolerably prolonged) must be brought to a conclusion in the shortest time. In its electroacoustic qualities the new telephone must exceed the best foreign models. It is necessary that it possess uniform frequency response in the transmission and reception of speech in the frequency range of 300 to 3,500 cycles, provide high syllabic discrimination, and have excellent external appearance.

Other current projects in the field of city telephone communications are also proceeding at extremely slow tempos, and a few of them are ending with the same lack of quality. For example, there has been great delay in developing a universal telephone switchboard, which is much needed for telephone systems of small capacity. The direction switches produced until recently for remote satellite ATS's had poor circuitry,

necessitating changes in equipment of this type which had already been placed in operation. It is the prime duty of workers of scientific research organizations and industry not only to speed the development and production of telephone equipment but also to substantially increase its quality.

It is well known that automatization of production processes plays a large role in increasing the productivity of labor. Nevertheless the scientific research organizations and industry have devoted and are now devoting very little attention to the creation of telephone apparatus which will permit complete automatization of the checking of exchange equipment and permit automatic monitoring of the condition of a cable network. The gap in this field has been partially filled owing to the creative initiative of the engineering and technical personnel of operational enterprises. Thus, workers of the city telephone networks of Moscow, Leningrad, Rostov-on-Don, Voronezh, et al. have developed and introduced test equipment -- a unit for automatic checking of the condition of the insulation of trunk telephone cables, a board (panel) for checking the condition of automatic telephones, instruments for automatic checking of twisted pairs, and individual assemblies of exchange equipment, etc. The Central Design Bureau of the Ministry of Communications USSR was of great help in planning the layout of the test instruments. In the future considerably more attention must be devoted to the problem of automatic testing of telephone equipment and the production of the necessary apparatus for this testing. In addition the scientific research organizations must develop more multi-purpose equipment and industry must be presented with the task of producing an entire complex of test equipment.

Regrettably, the scientific research organizations developing telephone equipment show little interest in its operation under field conditions and provide inadequate assistance in eliminating the shortcomings that are discovered. The plants of the Ministry of Radio Engineering Industry USSR and of the Ministry of Communications USSR are not conducting an effective campaign for increasing the quality of series-produced telephone equipment. For example, it is impossible to explain the fact that after a brief period of operation the finders of the ATS-47 are out of adjustment and a number of the parts frequently break or are worn out. The service life of cords for the decade step-by-step finders, handsets, switchboards, and digit selectors is extremely short. Moreover, from year to year the plants of the radio engineering industry consistently fail to fulfill the plan for delivery of replacement parts for ATS-47 equipment, for telephones, and for manual telephone exchanges. All this undoubtedly has a negative effect on operation of the city telephone networks.

One of the most serious shortcomings in the improvement of equipment for city telephone networks lies in the lack of attention to line construction, for the high cost of this work is a strong impediment to an increase in the capacity of telephone exchanges. For some reason or another this important problem continues to exist within the purview of the Ministry of Communications USSR. Suffice it to say that the laboratory for line construction of GTS [City Telephone Communications], which was destroyed during the war, has still not been restored at the Central Scientific Research Institute of the Ministry of Communications USSR. It should have been the function of such a laboratory to engage in modernizing and decreasing the cost of line equipment as well as in creating new, effective systems of constructing city telephone networks.

The basic problem in the field of GTS line construction is to achieve a substantial reduction of the time spent in erecting these installations and to decrease the associated expenditures of materials and money. The successful solution of this problem will to a large degree lie in promoting the use of high-frequency carrier systems in inter-exchange junction lines by means of economical apparatus of small dimensions. The Central Scientific Research Institute and the Central Design Bureau of the Ministry of Communications USSR in cooperation with the production laboratory of the Administration of the Moscow City Telephone Network has already created the first model of such an apparatus for 24 high-frequency telephone channels and is presently testing it under practical conditions. It is necessary to continue this development at a rapid pace, to manufacture models for 100 channels or more, using for this purpose the latest achievements in semiconductor techniques, and in the near future to embark upon the series production of carrier-frequency apparatus.

Providing the city telephone networks with the new engineering advances and the necessity for increasing the level of their exploitation confronts the Ministry of Communications USSR and the workers of the city telephone networks with a number of inescapable and important tasks.

In addition to the most expeditious solution of the problems associated with the introduction of new techniques, the Ministry of Communications USSR must in a short time critically reexamine the existing system of organization of the work of operational and technical personnel of the city telephone networks, giving consideration to the experience accumulated by the foremost telephone enterprises of the Soviet Union. Particularly deserving of attention and wide distribution is the method of separate servicing of subscriber points which has provided excellent results in several networks. It is also apparent that substantial changes are necessary in the system of organization of work of the day shifts servicing the equipment of automatic telephone exchanges. It is certain that organizational overhaul is required in other work sectors as well.

The workers of the city telephone networks are obliged to increase their skills with every day, to add to their technical knowledge, to study thoroughly and master the new technical equipment with which the telephone enterprises are provided, to strive for more complete and more effective utilization of the telephone communications facilities serviced by them, to squeeze from engineering all that it may yield.

It is necessary to give wide distribution to the work experience of the best production workers, to make it the property of the operational and engineering personnel of all city telephone networks.

In mastering the new techniques, improving existing equipment, and automatizing production processes a leading role belongs to the production laboratories of the city telephone networks. In addition to being of direct assistance in production, they are bound by creative friendship with the scientific research institutes of the Ministry of Communications USSR to take part in solving the most pressing technical problems confronting the majority of the telephone networks of the Soviet Union.

A wide field of endeavor is open also before inventors, rationalizers, and innovators of production whose numbers among the personnel of the GTS are not small. By their rationalizer proposals, technical innovations and improvements they can and must unswervingly advance the techniques of city telephone communications and improve the technology of production processes.

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There is no doubt that the workers of the city telephone networks together with the workers of the scientific research organizations and of industry, inspired by the decisions of the July Plenum of the TsK KPSS, will apply every effort to the achievement of further technical progress in the field of city telephone communications and to increasing the operational level of its technical facilities.

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